

# Scrap Tire NEWS

Covering The News And Developments In The Scrap Tire Recycling Industry

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March 2014

## Counties To Manage Scrap Tires in Tennessee

The Tennessee Department of Environment and Conservation (TDEC) is stepping out of the scrap tire management business. As of July 1, 2014, TDEC will no longer be the lead agency for managing the state's scrap tire program. That role will go to Tennessee counties.

Under directive of Public Chapter 457, new legislation sponsored by the Tennessee Association of County Mayors and signed by Governor Haslam, counties will receive direct payment of the \$1.00 per new tire sold fee from the Department of Revenue. Currently, TDEC receives the tire fee revenues and disburses the funds to counties through grants.

Although the new law sets out two ways for counties to  
*See Tennessee page 3...*

## Recycled Rubber Shows Promise In Automotive Compounds

The automotive industry uses a significant amount of rubber and is in a unique position to incorporate recycled tire materials into a range of vehicle parts, that would divert large amounts of rubber material from landfills.



Commercial success using sustainable materials in automotive applications has spanned from the use of renewable feedstocks to recycled components. However, the use of ground rubber in the automotive industry is relatively small compared to other industries in a study conducted by the Rubber Manufacturers Association (RMA). The automotive industry consumed less than 10 percent of all ground rubber, with no significant increase between 2005 and 2009, the RMA reported.

To expand the use of these types of materials, Ford Motor Company researchers led a study to determine a formulation strategy to incorporate products from recycled ground tires and recycled EPDM (ethylene propylene diene monomer) into virgin EPDM formulations for use in automotive parts.

*See Automotive page 12...*

## Rubberific® Launches Rebranding Campaign

*New logo and package design position brand for continued long-term growth*



St. Louis, Missouri-based International Mulch Company (IMC) is rebranding its hallmark Rubberific® product line. The rebranding initiative includes a new logo and a complete redesign of all product packaging that will debut across North America in the spring of 2014.

"Demand for our products has grown steadily over the past decade and it was time to create a new brand design that will continue to serve as the gold standard for recycled rubber products for years to come," Cindy Miller, CEO of IMC said. "Having reached the milestone of recycling nearly 400 million pounds of rubber into landscaping and playground products this month, we felt it was a fitting time to unveil the new Rubberific® brand to retailers and consumers alike."

*See Rubberific page 6...*

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**Tennessee** *continued from page 1...*

receive \$1.00 per new tire sold fee, a majority of county mayors surveyed in 2013 said that they preferred direct payment from the Department of Revenue. As such, the Division of Solid Waste Management will terminate waste tire recycling grants on July 1, 2014 for any contract extending beyond June 30, 2014.

Tires received by the counties until June 30, 2014, will be reimbursed at \$1.00 per tire in accordance with terms in the existing grant contracts. After July 1, 2014, the Department of Revenue will make direct payments to the counties based on quarterly tire pre-disposal fee collections. The amount a county will receive is \$1.00 per new tire sold by tire generators based on quarterly reporting to the Department of Revenue.

Counties will have on-going responsibility for maintaining records of grant funding for three years after final payment of the grant in addition to other oversight and progress reporting requirements. Counties will also continue to provide one place in the county to receive tires.

Going forward, TDEC will continue to identify and fund cleanup of legacy large illegal tire dumps (created prior to July 1, 2014). The agency will also be responsible for certain annual reports and for enforcement of illegal tire dumps created after July 1, 2014. ♦

**See fees and uses in next column.**

### **Tennessee Tire Fee**

Tire Pre-Disposal Fee- \$1.35:

- Collected by tire generators from customers on each new tire sold. Tire generators keep \$0.10 for collecting the fee, completing reporting paperwork, and sending to the Department of Revenue
- Department of Revenue receives \$1.25 from tire generators quarterly.

Department of Revenue pays:

- Counties \$1.00 of pre-disposal fees reported
- TDEC \$0.25 of pre-disposal fees reported

### **Beneficial end uses for waste tires**

TDEC recognizes the following as grant eligible beneficial end uses:

- Using tire-derived fuel (tdf) in cement kilns or industrial boilers for the capture of energy.
- Production of tdf provided the Department approves of the specific end-use.
- Crumbling or pyrolysis of tire material provided the Department approves of the specific end-use.
- Civil engineering applications, such as Class I land-fill construction, road construction, and subsurface sewage disposal system aggregate.

## ***Tire Shredding Solutions From Barclay Roto-Shred***



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## Continental Named Tire Manufacturer Of The Year

Continental received two major awards from the trade journal "Tire Technology International" at a double-award ceremony last month.

The German tire manufacturer received the coveted Tyre Manufacturer of the Year award and also garnered the Tyre Manufacturing Innovation of the Year for its initiative to recycle rubber from end-of-life tires in conjunction with the retreading of truck tires at the ContiLifeCycle plant in Hanover.

Jury member David Shaw, Head of Research at Tyre Industry Research said Continental has combined the global strategic view with great products and a vision of a more sustainable future. Conti's new plant in Sumter, USA, shows commitment to a global future, while the Hurricane machine demonstrates a desire to reduce, reuse and recycle, he said.

Praising the ContiLifeCycle plant, jury member Joe Walter, an adjunct professor at The University of Akron added: "Utilizing end-of life rubber products should lead to a significant reduction in Continental's corporate carbon footprint while producing retreaded tires in an environmentally friendly fashion. ♦

## New Mexico Recycling Grants

The New Mexico Environment Department is accepting applications for Recycling and Illegal Dumping Grants.

Grant applications are due no later than 5 p.m. on Friday April 4.

The majority of funds, \$533,000, will be awarded for tire management projects to include: Abatement and cleanup of illegal tire dumpsites, construction projects using tire bales, recycling of scrap tires, and purchase of recycled tire products.

Funds totaling \$800,000 will be available from the Recycling and Illegal Dumping Grant Fund to award to municipalities, tribal entities, land grants, solid waste authorities, and cooperative associations. ♦

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## Michigan Using Rubberized Asphalt For Road Repairs

The Muskegon County (Michigan) Road Commission and other groups are investigating how to more cheaply fix Michigan roads with rubber derived from tires in a way that benefits the entire state. The Muskegon County Road Commission received a \$327,513 grant from the Michigan Department of Environmental Quality's scrap tire market development grant to explore the solution.

The road commission plans to use about 6,800 tires in rubber-modified asphalt to repave a road in Moorland Township. The grant covers half of the project's cost.

About 3.1 miles of Goebel Road will be repaved with a mix of rubber from recycled tires and hot, liquid asphalt. The county's highway engineer hopes that will make a stronger, more durable road and reduce maintenance costs.

The rubber in the new asphalt adds elasticity to the roads, which makes them more flexible during the freeze and thaw cycles, according to Michael Marshall, Scrap Tire Program coordinator for the DEQ. The elasticity prevents cracks that can allow water to seep in and ruin the road.

Rubber-modified asphalt is cheaper to use because less asphalt is needed to repave roads than with regular asphalt. It also reduces maintenance costs long term because of the increased durability of the roads, Marshall said. ♦

## More Recycled Materials Used In Asphalt

The National Asphalt Pavement Association (NAPA), Lanham, MD reports that a survey of the U.S. asphalt pavement industry finds that close to 25 percent of the asphalt mixtures manufactured in the 2012 construction season were produced using warm-mix asphalt (WMA) technologies.

The survey, conducted by NAPA under contract to the Federal Highway Administration (FHWA), found that the 1,141 U.S. asphalt plants queried produced about 86.7 million tons of WMA during the 2012 construction season, a 416 percent increase in the use of warm mix since the survey was first conducted in 2009.

For the first time, the 2012 survey also asked about the use of ground tire rubber, steel and blast furnace slags, and other recycled materials. More than 1 million tons of these recycled materials were incorporated into asphalt mixtures in 2012.

The survey also found that about 68.3 million tons of reclaimed asphalt pavement (RAP) and 1.86 million tons of recycled asphalt shingles (RAS) were used in new asphalt pavement mixes in the United States during the 2012 construction season. For the first time since the start of this survey in 2009, the amount of RAP and RAS used by producers exceeded the amount collected, the NAPA notes. ♦

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# Rubber Recycling NEWS

Rubberific continued from page 1...

Rubberific® Mulch, a rubber mulch that looks identical to wood mulch, was introduced when IMC opened its doors in late 2000 and is now sold both in-store and online at thousands of retail locations across the United States, at fine retailers such as: Lowe's, Menards, Ace Hardware, True Value, Costco, Wal-Mart, BJ's Wholesale Club, Meijer and DoitBest.

The brand started with mulch but has grown to encompass a complete product line of recycled rubber products (tree rings, timbers, swing mats, landscape borders, splash blocks, pavers) for both home and commercial use, all bearing the Rubberific® name. In addition, IMC

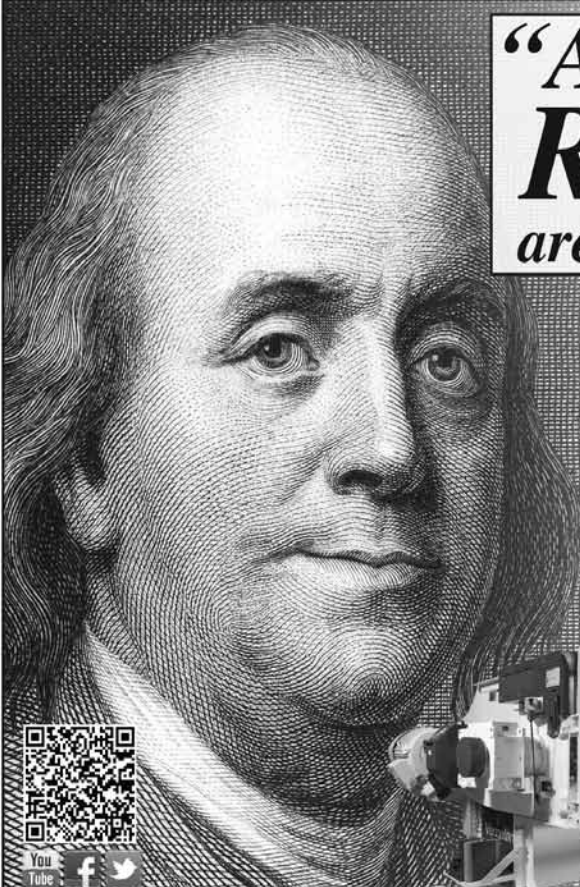
makes RePlay Mulch, a smaller nugget mulch rated the safest rubber mulch and groundcover on the market for playgrounds. It's sold nationally at Loews, the company said. IMC products are IPEMA certified and exceed standards set by the U.S. Consumer Product Safety Commission.

Brian Schultz Designs, St. Louis, MO developed the new Rubberific® look and brand for the market, IMC's Rich Muth, Senior Director, Marketing and New Product Development said. Highlights include a series of icons that speak to the key benefits of the product, and a graphic system that reflects the premium qualities of the product."



While the look of the packaging will change, what will not change are the core values that the company was founded on and that are translated into each and every

product that IMC produces beauty, safety, longevity and doing our part to be good stewards of the land. ♦



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## Ground Tire Rubber Used In Masonry Blocks

Dr. Mohamed A. ElGawady, a researcher at Missouri University of Science and Technology (Missouri S&T), is currently testing new masonry blocks made with ground tire rubber.

"Rubber has a lot of benefits in addition to its sustainability," ElGawady, associate civil engineering professor said in a news release. "It's very durable and provides good insulation. These new blocks could cut heating bills by 50 percent."

ElGawady has been working with Midwest Block and Brick, a Jefferson City, Mo.-based company, to create the blocks, which are made from sand and scrap tires ground to fine particles.

Researchers tested a variety of ratios of sand to rubber particles before coming up with the right balance.

"After testing various percentages, we now replace 20 percent of the sand with rubber, so the blocks retain their strength," ElGawady said.

ElGawady and his students use a compression machine to test and compare the strength of prisms built with the rubberized blocks to conventional concrete masonry blocks.

Both rubberized and conventional blocks are being tested in an environmental chamber at Missouri S&T. In the chamber, the blocks undergo cycles of extreme temperatures and humidity levels, simulating different weather conditions. The rubberized blocks are also tested under cyclic compression loads simulating earthquake loads. ♦

*Source: Missouri University of Science and Technology*

## Mississippi DEQ Awards \$90,000 Tire Grant

Six Mississippi counties plan to bolster their tire recycling programs using funds from a \$90,000 waste tire grant from the Mississippi Department of Environmental Quality (MDEQ). The Golden Triangle (Miss.) Regional Solid Waste Management Authority (SWMA) will use the funds to continue the local waste tire collection program for small quantity generators of waste tires for Choctaw, Clay, Lowndes, Noxubee, Oktibbeha and Webster counties.

According to MDEQ officials, the grants assist local governments in collecting tires from small businesses, governments and school districts. The grant also helps local governments clean up illegally dumped tires.

Regionally, the Golden Triangle SWMA stages seven trailers where small quantity generators can take scrap tires. Funds from the grant go toward the seven trailers as well as hauling and collection fees, an SWMA spokesman said. ♦



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# Michelin Plays Leading Role In Tire Recycling Initiative

Michelin, along with the French Atomic Energy and Alternative Energies Commission (CEA); biotechnology company Proteus; and SD Tech, an industrial company specializing in microfine rubber powders have joined forces in the TREC (tire recycling) initiative to develop ways to recycle scrap tires mechanically and chemically.

The TREC mechanical regeneration project involves regenerating rubber compounds to new tires, Michelin said.

"TREC Alcohol," uses a chemical approach that will enable the production of a chemical intermediate needed to synthesize raw materials used in making tires.

The alcohol derived from used tires will be included in Michelin's work on bio-butadiene production along with biomass alcohol from sources such as sugar, wood and agricultural waste under the BioButterfly initiative the tire maker announced last year.

Michelin, the CEA and Proteus-a subsidiary of specialty chemicals producer PCAS Group will develop the alcohol approach, which is designed to produce alcohol by fermenting synthesized gas derived from the gasification of scrap tires.

Through the expertise of the projects partners, TREC covers all stages of research and development process, from scientific concepts through phase pilot, Michelin said.

For the mechanical recycling, Michelin is working with SDTech S.A. and Proteus to develop technology for producing micropowders through micronization and selective devulcanization using biotechnologies, the companies said.

SDTech is an industrial company based in Ales, France, specializing in contract micronization, analysis and treatment of ultrafine powders. PCAS is an international fine and specialty chemicals group based in Longjumeau, France.

TREC is backed by a 51 million (Euro) budget extending over eight years. France's Agency for the Environment and Energy Management (ADEME) will provide 13.3 million (Euro) to Michelin and SD Tech as part of the French government "Investing in the Future" program.

Michelin did not say what its direct investment was but said researching new recovery methods "is particularly timely" in light of projected growth in global tire demand.

"Michelin's innovation strategy is always making the best use of raw materials," said Terry Gettys, director of research and development at Michelin.

"The TREC project is a perfect illustration of ecodesign, and we will make efficient new tires incorporating quality raw materials from used tires, thanks to the expertise of CEA, Proteus and SDTech." ♦

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## Monmouth Rubber And Plastics Corp Marks 50 Year Anniversary

Monmouth Rubber and Plastics Corp. (MRPC) is celebrating 50 years manufacturing closed-cell sponge rubber and plastic foam buns at its fully equipped ISO certified plant in Long Branch, N.J.

For half a century, MRPC has worked diligently to develop and retain its leadership role as "the experts" in rubber and plastics manufacturing - globally helping OEMs and fabricators develop and solve problems to ensure they have the right materials to meet the requirements of the application. Through its product development and improvement program, OEMs and Fabricators have the ability to offer their own customers effective solutions that are hard to obtain elsewhere, MRPC President / COO John Bonforte said.

MRPC also houses a comprehensive technical library and provides a free technical support program called "Ask John". ♦





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## Michigan Power Plant Set To Increase Tire Supply

The Michigan South Central Power Agency (MSCPA) plans to begin collecting scrap tires in Coldwater, Hillsdale and Union City along with other member communities beginning in March to fuel its tire retort power plants.

The company is working on permitting requirements and also plans to set up collection sites in each community for residents to drop off their tires. MSCPA employees will haul the tires away.

The tires are heated in a closed retort without air to break them down into gases and steel belts. The gases are fed into the coal-fired generators to add heat for production of steam, which is turned into electricity.

MSCPA officials said the company's fractionalization process is producing excellent efficiencies in the boiler and the burner producing about 2 percent more heat than expected. In addition, the joint gas system is burning off more of the coal carbon, which had gone up and out the plant's smokestacks previously.

Initial operating results show an operating capacity of 11,000 pounds of tires an hour

MSCPA also sells the scrap steel remaining when the tires are broken down. The company expects strong revenue from the steel sales noting that the first batch, which was contaminated with rubber and other residue from the start-up sold for \$225 a gross ton of 2,240 pounds, bringing in \$86,000. Based on recent improvements in the operating system, they expect about \$100 a ton more for the steel.

The company projected it would be several months before operational costs could be analyzed reliably. ♦

## Ohio Site Cleared of Tires

The mountain of tires at Ashtabula Iron and Metal (AIM) is gone.

More than 100,000 scrap tires have been removed from Ashtabula Iron and Metal (AIM) the now-bankrupt recycling and demolition company in Ashtabula, OH.

"The majority of the tires have been cleaned up," City Manager Jim Timonere said. The City is now working with the EPA (Ohio Environmental Protection Agency) to determine the next steps to remove the pile of rubble still on the site, he said.

In May 2013, AIM received its final orders from the Ohio EPA — remove more than 120,000 scrap tires on the property by Sept. 9, 2013 or the EPA would get a court order to seek access to the property to have an EPA contractor remove the tires, the Ohio EPA said in its notice to AIM.

"AIM cleaned up a lot and the EPA did a lot of the clean up," Timonere said.

The Ohio EPA has since referred the case to the Ohio Attorney General's Office.

The Ohio EPA first became aware of the tires from a search warrant and report received April 27, 2012 from the Municipal Court. According to the report, Ashtabula Fire Chief Ron Pristera told the court conditions on the AIM site "are or may become hazardous to public health, safety or welfare."

The fire chief also reported that during inspection of the property, inspectors indicated they had been alerted to the possibility of "low-level nuclear waste" on the site.

The EPA immediately investigated the site and inspectors discovered ground spills, pallets, railroad ties, lumber and thousands of scrap tire

Subsequently, EPA cited the owners/operators of AIM demanding they take immediate action to clean up the site, secure the site and submit a closure plan, or face fines of up to \$10,000 a day. ♦

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### 2014 Rubber Recycling Symposium

October 22-24, 2014  
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## CALL FOR PRESENTATION PAPERS

The Rubber Association of Canada is currently accepting papers for its biennial *Rubber Recycling Symposium* to be held October 22 to 24, 2014 in Montreal, Canada at the Montréal Marriott Château Champlain Hotel.

This symposium brings together international experts and professionals from the tire and rubber manufacturing sectors, the rubber recycling industry including processors, transporters, equipment manufacturers and stewardship organizations, as well as government and academia. While our Symposium focuses on a number of key issues, we are welcoming papers in the following areas of interest:

- *Innovations in Rubber Recycling Processing & Products*
- *New Technology and/or Equipment*

To be considered for the program, please send a short abstract (250-300 words) and speaker bio to The Rubber Association of Canada no later than **March 31, 2014**. Speakers that are invited to attend the Symposium will have their registration fee waived.

Please send your submission to Carolyn Goard at [carolyn@rubberassociation.ca](mailto:carolyn@rubberassociation.ca) or call (905) 814-1714 for more information. We thank all interested applicants in advance for each of your submissions and look forward to reviewing your proposals.



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Results of the study were presented in a paper titled “Evaluation of Recycled Rubber Material in Automotive Rubber Formulations” at the American Chemical Society’s Rubber Division Technical Meeting in Cleveland, Ohio last October.

Rubber use in the automotive industry falls into two general categories - tire and non-tire. Non-tire use falls into four categories – sealing, damping, isolation, and hoses. Non-tire use per vehicle line is well over one million pounds per year. If recycled rubber can be included in a portion of the formulations for non-tire rubber parts, both the number of tires being sent to landfills and other rubber waste such as EPDM can be diverted from landfills.

compounds containing recycled materials were compared to a control compound that contained no recycled material. The recycled materials were produced from consumer tires and EPDM using different methods, as outlined in Table 1.

Two of the recycled materials are carbon black extracted from recycled tires. One is tire crumb, composed of a mixture of styrene butadiene rubber (SBR) and natural rubber (NR) and the other is a rubber crumb composed of recycled EPDM.

Two strategies were followed to incorporate recycled materials into EPDM. Strategy 1 attempted to replace carbon black with recycled carbon black at the 50 per-

Table 1 - Recycled Materials Used in the Study			
Recycled Material	Process	Supplier	Nomenclature
Carbon Black	Reverse polymerization using microwaves	Environmental Waste International (EWI)	Microwave CB
Carbon Black	Thermal Vacuum Recovery	Carbon Green Inc (CG)	TVR CB
Devulcanized Truck Tire Rubber	Solvent devulcanization of tire crumb	Green Source Energy	APX™
Micronized EPDM Powder	Cryogenics	Lehigh Technologies	MD184EP

Source: Ford Motor Company

Automotive components using EPDM rubber vary from exterior applications to powertrain to sealing. Weatherstripping, drain hoses and splash shields are examples of typical automotive parts made of EPDM.

The key challenges for using recycled materials include ensuring a consistent feedstock of the raw chemicals into the new parts as well as incorporating them into existing rubber formulations, with no loss in performance.

EPDM rubber recipes contain large amounts of carbon black, which functions as a reinforcing filler. The study examines the incorporation of recycled rubber materials into EPDM recipes as both carbon black replacements and as inert fillers. Incorporating recycled materials into EPDM requires that the material meet the minimum or target physical properties required for the application.

The study evaluates four different recycled products. Two are recycled rubber that have been either devulcanized or cryo-ground. The other two are recycled carbon black that has been extracted from the recycled tire material. All of the

cent and 100 percent by weight levels. Strategy 2 kept the parts per hundred rubber of the control recipe the same but decreased the volume of the control recipe to 95 percent of the initial volume. The remaining 5 percent volume was filled with recycled material. This method is typically called over-batch-weight.

Strategy 1 used both recycled carbon blacks – Microwave CB and TVR CB. Strategy 2 used all four recycled materials listed in Table 1.

The primary lesson of the Strategy 1 study was that use of the recycled carbon black at the 50 percent replacement level was better than use of the recycled carbon black at the 100 percent level in terms of hardness, modulus, and tear resistance.

In the second study where the recycled materials were used as fillers in the compound, the study found the performance differences between the materials are not likely due to differences in particle size and more likely due to surface activity and/or particle surface area.

See **Automotive** page 21...



# Kentucky Posts Increase in Tire Recycling

*2013 Report captures tire program and market data*

Kentucky's statewide recycling rate for tires increased to 86.0 percent for 2013 compared to 80.5 percent for 2012, according to the 2013 Waste Tire Program Report. This rate is above the 81.6 percent U.S. tire recycling rate for 2011, the latest available national data. The Commonwealth has increased its recycling rate in the short-term by working to grow the in-state tire derived fuel (TDF) market. Looking ahead, diversification of markets could help the state increase its reuse percentage rate, the report said.

Kentucky has gone from no in-state markets in 2000 to a point where all of its Kentucky-produced TDF was used in-state in 2013. The report credits the state's TDF success to in-state market development efforts and information sharing. Currently, about 2.8 million Kentucky-generated PTEs (passenger tire equivalents, i.e., 20 lbs.) are annually used for tdf at four in-state facilities.

The newest in-state user, East Kentucky Power Cooperative (EKPC),

came online in 2013 consuming 872,900 PTEs. The Kentucky Energy and Environment Cabinet submitted

a letter in support of EKPC's petition to the Public Service Commission (PSC) during 2012 to use the Fuel Adjustment Clause for TDF which was subsequently granted during 2013. Use of the provision allows for quicker recovery of TDF cost from the electrical customer and makes the use of alternative fuels more economical.

The report estimates EKPC could use 1.4-2.8 M PTEs/yr if 2-4 percent of total BTUs were TDF. Kentucky already has a total TDF capacity that exceeds its TDF market production. Some of these tires would have to come from out of state, probably Ohio and Tennessee.

Under the waste tire program, Kentucky offers fuel users assistance for capital improvements and equipment. In 2001, Kentucky spent \$454,276 on capital equipment

to assist Owensboro Municipal Utility (OMU) in using TDF. OMU used 298,000 PTEs in 2013. The NewPage paper mill located in Ballard County received \$750,000 in 2006 to make improvements to its process infrastructure in order to use 3,750,000 PTEs by 2012. To date, NewPage has used 1,825,000 PTEs and requested an extension to the initial deadline to meet the goal.

Overall, rubber fuel use capacity in the Commonwealth has increased from approximately 1.1 million PTEs per year in 2001 to approximately 2.9 million in 2013. In 2001, all Kentucky-generated waste tires went to out-of-state TDF markets. Currently, virtually all 2.0 million Kentucky annually-generated PTEs that are destined for TDF are used in-state.

Ground rubber, Kentucky's second largest market, continues to grow at a steady pace. Under the state's grant program, 15 grantees, primarily schools and municipalities, received funding for crumb rubber uses in athletic fields and playgrounds. Total ground rubber usage

for 2013 topped 5,250 tons.

Manufacturing of ground rubber and mulch from Kentucky tires consumed

1,095,500 PTEs in 2013. Liberty Tire (formerly Martin Tire) in Union County manufactures a large quantity of colored mulch for outlets such as Lowe's, Home Depot and Wal-Mart. Dalton Tire Recycling in Boyd County produces ground rubber for playgrounds and horse arenas. Porter Tire in Carter County started producing crumb rubber this year.

Among the emerging new markets for ground rubber in Kentucky, the first rubber modified asphalt project in the state in almost 20 years was completed in 2013. According to the report, the Transportation Cabinet is considering the use of rubberized asphalt for other projects. ♦

IN-STATE TDF USAGE (PTEs)			
Company	2011	2012	2013
Kosmos	1,116,800	1,295,000	1,369,700
OMU	358,500	362,000	298,000
NewPage	218,200	410,000	325,000
EKPC	0	0	872,900
<b>TOTAL</b>	<b>1,693,500</b>	<b>2,067,000</b>	<b>2,865,600</b>

Kentucky Waste Tire Markets 2013 (Tons)								
	Recycled						Disposal	TOTAL
	TDF	Crumb	Civil Eng.	By-products	Resale	Subtotal		
In-State	18,015	5,250	1,285	1,990	3,790	30,330	7,530	37,860
Out-of-State	0	0	155	0	0	155	0	155
Amnesties	8,265	5,705	0	1,095	735	15,800	0	15,800
<b>TOTAL</b>	<b>26,280</b>	<b>10,955</b>	<b>1,440</b>	<b>3,085</b>	<b>4,525</b>	<b>46,285</b>	<b>7,530</b>	<b>53,815</b>
Percentage	48.8%	20.4%	2.7%	5.7%	8.4%	86.0%	14.0%	100.0%

# Agreement Reached For Cleanup Of Maryland's Largest Tire Dump

*\$2.5 million Crownsville cleanup will tap state scrap tire fund*



*Photo courtesy of MES*

The agreement gives the state access to the property and starts a permitting process with Anne Arundel that will allow cleanup "as soon as possible." State officials estimate it will take 12-18 months to complete permitting project design, contractor selection for the cleanup.

As part of the agreement, the Boehms are required to apply for a conservation easement on 37 acres of their property, which would prohibit future development on the land.

And on another part of the property where there's a former landfill, they have agreed to limit future use, including not building any homes or tapping into the groundwater.

The South River Federation joined the lawsuit in 2013 out of concern about environmental contamination and the threat of fire from the tires, which sit in the river's headwaters.

**M**aryland state officials have reached an agreement with the owners of a 200-acre property in Crownsville to cleanup more than 200,000 scrap tires stockpiled on the site.

The Maryland Department of the Environment (MDE) led efforts to negotiate the deal between the state, the South River Federation and the property owners, Louis A. Boehm and Joseph T. Boehm that allows the department to "move forward with a cleanup to protect the environment and public health."

An Anne Arundel County judge signed off on a consent there last month giving MDE access to the site and ending the state's lawsuit against the Boehm family.

The Department of the Environment sued brothers Louis A. Boehm and Joseph T. Boehm in 2012 to try to force them to clean up the tires or pay the state to clean them up. The lawsuit also sought fines for pollution violations that could have reached into the millions of dollars.

The property owners had worked with the state over the years on a cleanup plan, according to the lawsuit. After discussions broke down in 2012, the state sued.

In the lawsuit, the state alleged the tires were dumped there over the years illegally. The Boehms admitted no liability under the agreement, and won't pay any fines or penalties.

The next step is for the state Board of Public Works to approve money from the scrap tire fund for the cleanup.



*Photo courtesy of MES*

For years, the Boehm property was the second-largest tire dump in Maryland, behind a 1.1 million-tire dump called the Garner property in Prince George's County. The state spent \$10.5 million on that cleanup, completed in 2012. In all, MDE cleanups have removed 10.6 million tires from more than 900 sites around the state over the last two decades.

The cost of removing an estimated 200,000 tires will be paid from the state's scrap tire fund, established in 1992. The fund comes from an 80-cent fee on new tire sales. ♦



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# Financial Firm To Purchase Tire Log™ Maker

AmeriWorks Inc. (AWKS), formerly Ameriworks Financial Services, Inc., is entering the business of recycling tires and converting them to alternative products. The company plans to collect and process scrap tires for their component parts. In addition, AWKS recently signed a Letter of Intent with Re-Tread Products Inc. (RTP), Green Valley, NY for a period of six months to June 1, 2014.

RTP developed and patented the Tire Log™ - a building material with the size and shape of a wooden log - made of recycled tires.

The recycling method to create a Tire Log™ is based on a simple procedure that helically wraps the steel belted tread of the tire around a core of tire treads to any length or diameter. Tire Logs™ can be made in 10 foot and 20 foot lengths. The net result is a building material that lends itself to applications such as: contour landscaping, security barricades, bunkers, temporary shelters, heavy equipment platforms, bulkheads, and crash barriers, at approximately 60% the cost of conventional building products. According to AWKS, each Tire Log™ manufacturing facility could employ up to two dozen or more American workers and may upcycle close to 2 million waste tires per year.

Ameriworks said the Tire Log™ product will not provide revenue for the Company for at least two years while the

manual machinery manufactured during the R&D stage is automated. However, a limited number of Tire Logs™ are expected to be made during this period for further testing, especially as a building material in earthquake prone regions of the world. The East Shrodsburg, PA-based Company plans to test the "bend not break" characteristic of the Tire Log™ product by partnering with certain University or private enterprise organizations to test the viability of the Tire Log™ as a building material under extreme conditions.

Several laboratories in the U.S. operate hydraulic shaker tables specifically designed to meet an earthquake simulation of 8.4 on the Richter scale. George Washington University is presently testing building materials to find which material can stand up to a severe earthquake, AWKS said. Researchers hope to use the testing results to identify the types of materials that can be used for rebuilding in quake ravaged places like Haiti. In the meantime, AmeriWorks is positioned to enter the traditional tire recycling business and drive revenue from its tire collection processing and product sales operations. The company also anticipates vertical growth from the manufacture and sale of Tire Logs™ directly to local, county and state agencies, the military, foreign franchises and directly to the public through retail operations like Lowes and Home Depot. ♦



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## French Firm Advances Scrap Tire Projects

The French firm Pneutech SAS is making advancements in tire recycling on several fronts.

The company is currently moving forward in seeking investment for the design, development and construction of a 30 megawatt power station in France fueled by scrap tires.

A feasibility conducted by Pneutech President Gregorie Jovicic found that 300 tones of tires are combusted in France every day. The most recent tire combustion unit was placed in service in 2008 and uses tire fuel to generate heat to produce steam and electrical power.

The project has received interest and support from several financial, industry and governmental agencies in France.

Recently, the French Minister for the Economy and Finance recognized the significance of the energy project by making it eligible for a research tax credit. The Minister's action was based on a technical opinion from the Minister of Research, Pneutech President Gregorie Jovicic said.

The project, which will create up to 40 new jobs, is also supported by the Automobile Recyclage Association.

Jovicic is seeking domestic and international investors for the project and has prepared a project financial package detailing profitability, return on investment and potential risk factors.

In other news, Jovicic has launched an industry newsletter Recyclage Automobile designed to provide information and news on tire recycling issues and scrap tire markets in France.

First published in November 2013, the French language newsletter is steadily adding content and industry coverage, Jovicic said. ♦

To learn more, contact:  
gregoire.jovicic@pneutech.fr.

## Recycled Rubber Adds Benefits To Building Products

The U.K. company Enviromate Ltd has developed a range of construction materials that use a patent protected methodology to produce building products with recycled materials. The products are marketed under the firm's Flexi Family brand.

Flexiroc is a mortar bound rubber composite that is used as an alternative to traditional concrete, aggregate, asphalt and hardcore. It can be used in house foundations, floors, lean mixes and some structural applications. Flexiroc is manufactured exactly the same as ready-mix concrete through the same plant and delivered exactly the same via tumble mixer or volumetric truck.

It incorporates a high proportion (about 70 percent) of recycled rubber in its manufacture. The addition of recycled rubber allows expansion and contraction creating a high degree of integral flexibility in the construction products.

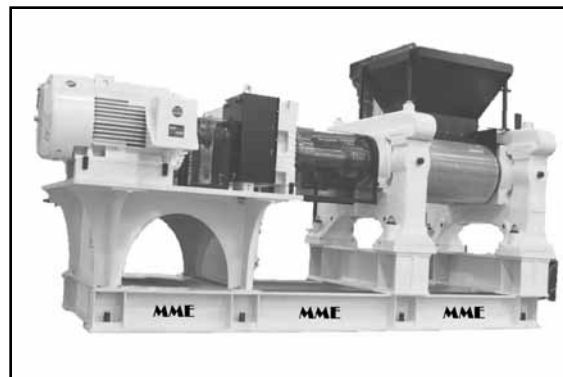
Flexiroc is 50 percent lighter than traditional concrete increasing the carrying capacity of a mixer truck and saving valuable money on time, fuel and wages.

It is available in precast house blocks which are used in a fast house build system. Flexiroc is also available as pre-cast pavers, building blocks or wet-pour site mix.

According to Enviromate, houses that are built from Flexiroc house blocks are earthquake proof, hurricane and tornado proof. Testing has shown they will also withstand bullets and bomb blasts, the company said. Additionally, Flexiroc can be used as a shock proof base and in all types of sports pitches and sports applications both indoors and out. ♦



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# Tire Recyclers Talk Safety

*RIOS program helps tire recyclers manage time, materials and motion*

Modern tire recycling businesses deal with many elements on a daily basis in addition to shredding tires. Logistics, transportation, production, employee health and safety, obtaining feedstock and developing markets are among the many elements tire recyclers are faced with in their day-to-day operations. Balancing these elements is the central challenge tire recyclers face.

The Recycling Industry Operating Standard (RIOS) is one way tire recyclers can manage the quality, environmental, health and safety elements of his/her business. RIOS, a product of the Washington, D.C.-based Institute of Scrap Recycling Industries (ISRI), was featured in a recent webinar specifically designed for tire recyclers.

Tire recyclers attending the webinar had the opportunity to learn what RIOS is, how it works, its benefits and what steps they need to take to be RIOS certified.

RIOS is available to any recycler or refurbisher of any community anywhere in the world, RIOS Director Darrell Kendall said. Its primary goal is to raise industry standards and the professional image of the tire recycling industry.

RIOS certifications give recycling facility owners and managers the tools and resources to improve their bottom lines, enhance operations and handle ongoing and future changes in industry regulations.

Certification demonstrates a recycler's commitment to high standards to customers, the general public and regulators, Kendall said. Unlike other standards, the RIOS standards are marks of excellence developed for the recycling industry to address industry-specific issues, he said.

Also, the RIOS Standards integrate the key operational quality, environmental, health and safety elements found in other standards such as ISO 9001, ISO 14001 and OSHA's 18001 bringing them together into one streamlined management system.

These attributes are attractive to tire recyclers for several reasons, those participating in the webinar said.

One of the key issues for tire recyclers is product quality.

"It has to be exactly the same each time," Gary Champlin, General Manager of Champlin Tire Recycling and a webinar attendee said.

Recycled tire rubber is going into more and more compounds and products putting greater demand on recyclers

to meet customer requirements for particular grades of rubber, particle size distribution and other specifications, tire recyclers said.

The RIOS certification uses a Plan, Do, Check, Act model to achieve quality, provide continual improvement and maintain safe and environmentally sound operations, Kendall said.

This model is designed to help recyclers uncover strengths and weaknesses, institute operational discipline and comply with domestic and international laws.

The result is repeatable "Standardized" production methods and predictable quality assuring that each time a customer buys a load of recycled tire rubber it's the same each and every time.

"RIOS really is a practical program," Champlin said. It allows tire recycling

companies to develop a management system that includes work habits and standard operating procedures specific to their operations.

How RIOS works, Kendall said, is once a tire recycler identifies a problem or bottleneck in production, for example, RIOS provides a useful roadmap for resolving the problem. Operators/owners can use the RIOS protocol to uncover the issue, get to the root cause and develop a process to not only correct the issue but put the mechanisms in place to reduce chances of reoccurrence.

But RIOS doesn't stop there, Kendall said. If a load is rejected or downgraded employees can follow the steps of the program to identify the root cause and put together an appropriate action plan to assure there are no complaints, rejections or downgrades of future loads. This process can then be implemented as part of the company's operating procedures and future training.

Basically, RIOS builds on a company's experiences including learning from mistakes and growing in efficiency. It empowers employees to do more, to want to do more. It gives employees a "sense of ownership", Kendall said.

The result, tire recyclers using the program said, is higher employee retention (up to 45 percent) a decrease in insurance rates, and a safer workplace with fewer injuries and loss time.

Kendall invites tire recyclers who want to save money, improve production efficiency and product quality and raise the professionalism of the industry to contact him at: [darrellkendall@isri.org](mailto:darrellkendall@isri.org). ♦





## European Tire Replacement Market Stabilized

The European Tyre and Rubber Manufacturers Association (ETRMA) reports the 2013 tire replacement market stabilized in 2013 after a shaky start to the year. According to ETRMA figures, the car segment contracted 1 percent to 192.699 million units in 2013. Total truck tire sales were at 8.849 million. Overall, 2013 showed "timid signs of recovery that consolidated by the end of the year," ETRMA said.

Consumer tires performed the worst with a 1 percent decrease in sales, compared to the previous year. Country data shows this in Germany and Poland. However, signs of recovery were evident in France, Italy, the U.K. and Spain.

For the truck and bus segment, the increase in sales growth has been more evident with an 8 percent increase compared to the previous year.

Trade data in these two segments confirms that imports from China dominate inbound product sales, with products from the People's Republic representing as much as 40 percent of total imports for consumer tires. In general, imports are growing in all categories and especially in the truck segment, where they constitute about 20 percent of the total European market.

The agricultural and motorcycle markets showed a "somewhat stable" performance compared to 2012 with 1 percent and 2 percent growth respectively. ♦

## Where The Fee Goes

A CNYCentral.com investigation into the New York state tire recycling fee, found what most tire recyclers know: the majority of the tire fee goes for something other than tires. Since 2003, New York State collects \$2.50 for the purchase of every tire sold in the state.

Originally earmarked to fund cleanup of large tire dumps, today only 23 percent of the amount collected actually goes to cleanup of tire dumps and other abatement efforts.

The state general fund takes \$6 million from the fee revenues, while another \$14 million goes to the salaries of employees in the DEC's Hazardous Waste Division, according to CYNCentral.com's report. The State Department of Environmental Conservation (DEC) claims that the fee generated \$26 million annually. According to DEC the fee has been renamed the Waste Management and Cleanup Fund and that fund pays \$17.4 million per year for salaries of DEC employees, furthering reducing funds for tire cleanup or recycling activities.

In its own defense, DEC says it has cleaned up twelve tire dump sites in the past two years and since 2003 has spent \$115 million on waste tire abatement or about \$11.5 million per year. That's out of \$26 million collected each year.

The fee, originally slated to expire in 2010, was extended to 2016. ♦

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## New Hardfacing Wire For Tire Shredding Knives

Hardface Technologies, a business unit of Postle Industries, has introduced a new product that it says is "the ultimate hardfacing wire for tire shredding knives."

Cleveland, OH-based Hardface says its Postalloy® Ultra-Shred 580, a metal-cored, gas shielded wire, is a martensitic tool steel type alloy with numerous tightly packed carbides for excellent abrasion resistance under high impact. One layer deposits exhibit wear characteristics that would be expected from a chromium carbide hardfacing product.

The alloy properties give the knives a resistance cutting edge even under high heat conditions created by extreme friction, the company said. Deposits are slag free and exhibit a Rockwell hardness of 55-58 Rc.

"Postalloy® Ultra-Shred 580 has proven to be an exceptional way to hardface tire shredding knives," Russ Speese, Hardface Industries' vice president, sales and marketing said.

The product is also used in other applications including cutting tools, shear blades and hot or cold trim dies.

Hardface Technologies advanced hardfacing products, which have been engineered specifically for high wear environments, are available through Hardface's worldwide distribution network. ♦

## PanAridus Expands Research Department

PanAridus L.L.C., an Arizona bio-agriculture company, announced it has tripled the size of its research and extraction departments since the first of the year.

The company, which specializes in the development of the desert shrub guayule as a natural rubber crop, has also purchased new extraction equipment and begun multiple shifts to meet demand from tire companies seeking to introduce guayule rubber into their compounds.

The company also hired Bruce King, a 32-year veteran of Dow Chemical Co. to head Pan Aridus' research department. King co-invented for Dow a flame-retardant technology for the polystyrene foam industry that won the 2012 R&D 100 award, PanAridus said.

"Our goal is not just to produce quality guayule, but to set the standard for the industry," PanAridus CEO Michael Fraley said regarding the hiring of Mr. King and the company's expansion.

In December, 2013, Cooper Tire & Rubber Co. announced Pan Aridus had joined Cooper and its consortium partners in a \$6.9 million Biomass Research and Development Initiative (BRDI) grant for development of guayule plant-based polymers for use in tire manufacturing. ♦

## Clemson To Host Pre-Conference Workshop

The Clemson University Tire Industry Conference will offer a pre-conference workshop when it convenes at the Omni Hilton Head Oceanfront Resort April 23-25 in Hilton Head, South Carolina.

A first for Clemson, the workshop, "Legislative/Regulatory Development and Rule-making," is scheduled from 9 to 11:30 a.m. Wednesday, April 23. Michael Wischhusen, technical director-litigation at Michelin North America Inc. will lead the workshop.

Pre-conference workshop speakers include Doug Major, senior director of product support for the Sumitomo Rubber Industries Ltd. Group; Tracey Norberg, senior vice president and corporate counsel, Rubber Manufacturers Association; Eugene Peterson, tire program leader, Consumer Reports; Bill Hyde, senior director-olefins and elastomers, HIS Chemical; Rodolpho B. Manzone, vice president-market development, Yulex Corp.; Dick Gust, president, Liberty Lakin Inc.; and Glenn Maidment, president, Rubber Association of Canada. ♦

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# STN News Briefs

... **Andrew Horsman**, executive director of the Ontario Tire Stewardship has stepped down from his position as principal in **CleanTech**, a green technology firm. In addition, he is selling his interest in the company, according to Canadian news sources. Horsman, who will divest his \$15,000 stake in CleanTech with no profit, said conflict of interest concerns prompted his resignation, the news reports stated.

... A tire recycling process designed by **Environmental Waste International (EWS)** emits 12,166 metric tons fewer carbon dioxide equivalents compared to incineration, and 3,136 metric tons fewer CO<sub>2</sub>e compared to the production of crumb rubber, according to results reported by consultancy Pinchin Environmental. EWS uses a reverse polymerization process which involves the direct application of high-energy microwaves to scrap tires and other organic waste. The microwaves break down the waste at temperatures of 150 to 350 degrees Celsius. The atmosphere during the process is nitrogen-rich and oxygen depleted, EWS said. In November, the company completed a continuous four-day run of its TR-900 waste tire recycling facility in Sault Ste. Marie, Ontario. Construction of a commercial facility is the next step, EWS officials said.

... **Lamar Chambers**, former senior vice president and chief financial officer of specialty chemical giant **Ashland Inc.**, has been elected to the board of directors of Lehigh Technologies Inc. Tucker, GA-based Lehigh Technologies manufactures sustainable, engineered powders from scrap rubber. Chambers joined Ashland in 1976 and became CFO in 2006, Lehigh said. Other Lehigh board members include Jim McMaster, former executive vice president of Yokohama Tire Corp., and Steve Delaney, former CEO of electronics manufacturing services provider Celestics Inc.

... Toronto, Canada-based **Target Technologies (TTII)** has re-entered the ambient crumb rubber market supply to the artificial turf and running track industries throughout North America. Along with the re-introduction of ambient rubber, TTII continues to supply high quality in-fill products for the synthetic sports field and residential markets including silica sand, cryogenic rubber, and FutrFill TPE. Rubber for playgrounds, equestrian arenas, ballistics, and molding applications also available.

... Maryland environmental officials have issued permits for a proposed waste-to-energy facility in Frederick County. The **Maryland Department of the Environment** said in a news release that it issued the environmental permits for the Northeast Maryland Waste Disposal Authority for the Frederick/Carroll County Renewable Waste-to-Energy Facility in Frederick. Hampton, N.H.-based Wheelabrator Technologies Inc. will operate the facility, which will incinerate 1,500 tons of municipal solid waste, biosolids and scrap tires a day and produce about

45 net megawatts of electricity. The air quality permits issued by the Maryland department with regard to limiting mercury emissions are more stringent than what state and federal law requires, it said.

... **ArmaTerra**, Reno, NV has developed and patented a way to use tires in various configurations to replace existing metal and polymer-based geo-reinforcing elements. GeoTire products take advantage of the inherent strength, durability and negative cost structure of scrap tires. The GeoTire Technology can be used in reinforcing slopes, mechanically stabilized embankments, retaining walls, marine walls and in modular block wall applications, company founder Mike Merrill said.

... Former Secretary of State Hilary Clinton will deliver the keynote address at the **ISRI 2014 Conference in Las Vegas**, April 8-10. Clinton will address attendees on Thursday, April 10 during the closing general session. Scientist and Apple Co-Founder Steve Wozniak will speak during the Opening Session.

... Danish recycling equipment manufacturer, **Eldan Recycling A/S**, has opened a sales office in Pulborough, U.K.. Peter Jones, who formerly worked with Eldan's U.K. agent MMH Recycling, is the branch manager of the new facility, an Eldan press release said. Eldan's managing director Toni Reftman said the new U.K. office was opened in response to increased recycling equipment demand in the country. ♦

## **Automotive** *continued from page 12...*

Moving forward, the study recommends it is worthwhile to pursue the use of recycled carbon blacks as a replacement for virgin carbon black in EPDM recipes but at lower replacement levels and/or with modifications to the EPDM recipe. It is also worthwhile to pursue the use of the recycled materials as inert fillers, as the performance of the compounds was good without optimization of the recipe. Further improvements to the performance can likely be made with recipe modifications.

An important property for EPDM performance is the extrudability of the material. Further consideration of the use of recycled material in EPDM formulations should include a test of the ease of processing that includes the extrusion appearance.

Future explorations are planned on the use of these recycled materials in other rubber applications, including tire tread. For APXTM devulcanized truck rubber, for example, it is expected that the compatibility of this SBR based filler would perform well in a SBR tread compound. There are also micronized SBR powders that may be appropriate for tire tread applications. ♦

*Authors: Janice L. Tardiff, Peter Rohweder, Cynthia M. Flanigan, Madeline Harper, Ford Motor Co., Dearborn, MI.*

# STN Calendar

## April

6-10 ISRI Convention & Exposition, Las Vegas, NV.  
Contact: 202-662-8500. E-mail: [convention@isri.org](mailto:convention@isri.org)  
23-24 California Tire Conference, Sacramento, CA.  
Contact: 916-341-6433. E-mail: [SallyFrench@CalRecycle.ca.gov](mailto:SallyFrench@CalRecycle.ca.gov)  
23-25 Global Tire Industry Conference, Hilton Head, SC.  
Contact: 800-258-1017 [www.clemsontireconference.com](http://www.clemsontireconference.com)  
28-30 Waste Expo, Georgia World Congress Center,  
Atlanta, GA. Contact: 203-358-4128. [www.wasteexpo.com](http://www.wasteexpo.com)

## May

27-30 Reifen (Tire) Essen 2014, Essen, Germany.  
Contact: +49 (0) 201 72440. [www.messe-essen.de](http://www.messe-essen.de)

## June

24-26 ASTM DO4 Road & Paving Materials, Toronto,  
Canada. Contact: 877-909-2786. [www.astm.org](http://www.astm.org)

## July

6-10 ISRI Latin American & Caribbean Tyre Expo, Panama.  
Contact: 786-293-5186. E-mail: [info@latintyreexpo.com](mailto:info@latintyreexpo.com)

## August

20-22 ITEC Orlando 2014, Orlando, Florida.  
Contact: 330-865-6169. E-mail: [sarnold@crain.com](mailto:sarnold@crain.com)

## September

3-4 Recycled Rubber Products Technology Conference, Las  
Vegas, NV. Contact: [info@RecycledRubberProducts.org](mailto:info@RecycledRubberProducts.org)  
9-11 ITEC Akron 2014, Akron, Ohio.  
Contact: 330-865-6169. E-mail: [sarnold@crain.com](mailto:sarnold@crain.com)  
29-Oct. 1 Synthetic Turf Council Annual Membership  
Meeting, San Antonio, TX. Contact: 678-385-6720.  
E-mail: [office@syntheticturfCouncil.org](mailto:office@syntheticturfCouncil.org)

## October

14-16 International Rubber Expo, Nashville, TN .  
Contact: [bethb@rubber.org](mailto:bethb@rubber.org)  
14-16 National Recreation & Parks Association Congress,  
Charlotte, NC. Contact: 800-626-6772. E-mail: [ahersey@nrpa.org](mailto:ahersey@nrpa.org)  
22-24 Rubber Recycling Symposium, Montreal, Canada.  
Contact: 905-814-1714  
22-24 Greenbuild International Conference & Expo, New Or-  
leans, LA. Contact: 800-795-1747. [www.greenbuildexpo.com](http://www.greenbuildexpo.com)

## November

21-24 American Society of Landscape Architects Meeting &  
Expo, Denver, CO. Contact: 202-898-2444. [www.asla.org](http://www.asla.org)



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